Remarks/Arguments

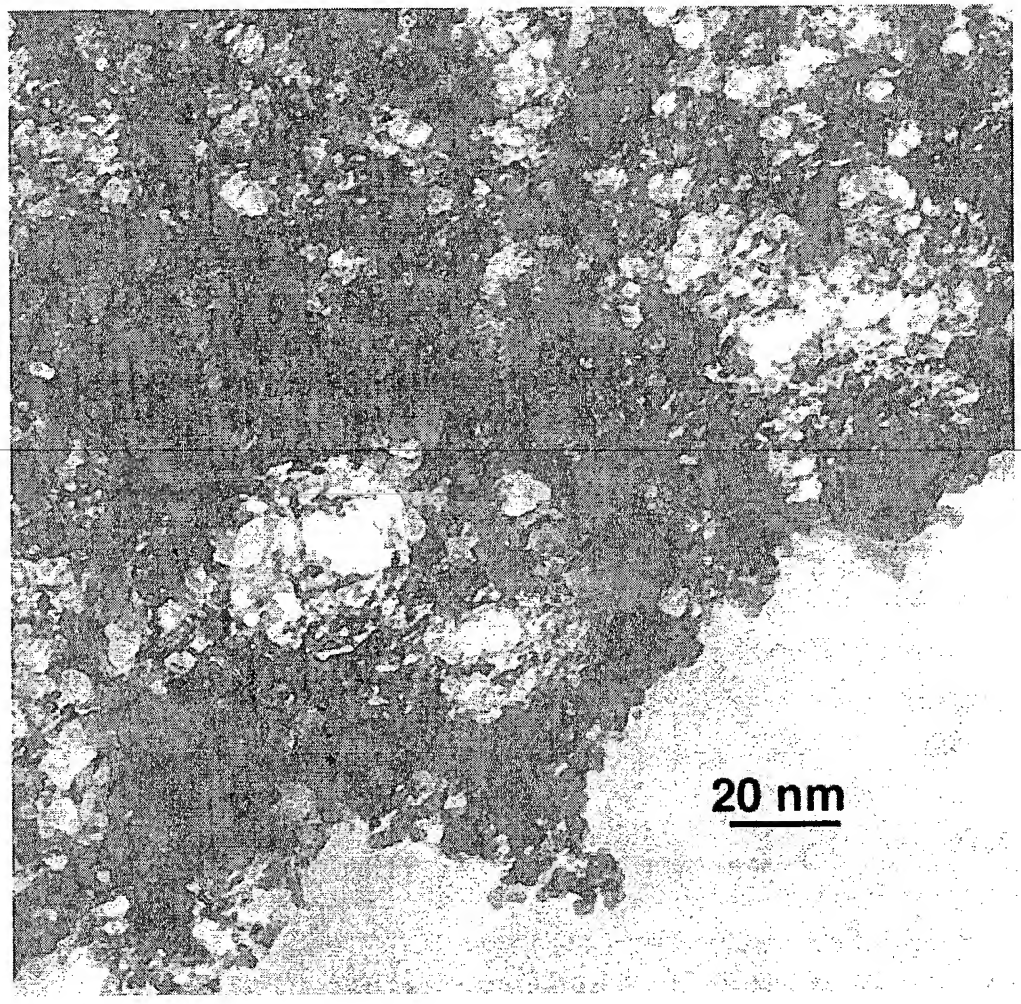
In the specification, the applicant has replaced the heading at the top of page 8 with the language "Brief Description Of The Drawings" as suggested by the examiner. No new matter is added by this amendment. Claims 13, 18, and 23 have been amended to recite dependency to claims 12, 17 and 22, as suggested by the examiner. No new matter is added by this amendment.

35 U.S.C § 102(b)

The examiner has rejected claims 1-5 and 7-9 under 35 U.S.C § 102(b) as being anticipated by Wirth et al., US Patent 5,716,705. The examiner argues that "while Wirth et al. may not use the term "aerogel", this is the common meaning for "dry alumina and silica" in example 1, column 8, line 15." The examiner's assertion as to the "common meaning" of these terms is both factually incorrect, and is further contradicted by the Wirth et al. reference.

As commonly used in the chemical industry the terms "dry alumina" and "dry silica" do not refer to aerogels. Rather, these terms are used for small particles, typically used in separation columns. The examiner should note that aerogels are NOT particles. Rather, as described by the applicant (and commonly understood by those having ordinary skill in the art), aerogels are "low-density, high surface area solid materials, typically ceramic oxides, which have been expanded using an explosive release of pressure, typically in a supercritical fluid (SCF) or by flash evaporation of a solvent from a sol-gel precursor solution. One of the more common aerogels is composed of silicon dioxide (or "silica"), which is presently available from a variety of commercial vendors. Aerogels commonly display remarkably high surface areas, achieved at minimal cost due to the simplicity of the method used for their synthesis. For example, silica aerogels exhibiting surface areas of approximately 1,250 m^2/g, are commercially available." (emphasis added). The explosive release of pressure used to form aerogels does not result in the formation of particles; the material more closely resembles a molecular sponge. To better assist the examiner in visualizing an aerogel, a transmission electron

micrograph of a base-catalysed silica aerogel taken from the Earnest Orlando Berkeley National Laboratory is provided below. Plainly, it is NOT a particle structure.



(image located at http://eande.lbl.gov/ECS/aerogels/images/AEROGEL.JPG)

In contrast to the explosive process used to form aerogels, the process for the industrial production of dry alumina is known as the BAYER process. The BAYER process is relatively old, having been created in 1887, one year after the invention of the electrolytic process by Hall and Héroult (the manufacturing of alumina from aluminium). This process was implemented for the first time in 1893, by the "pure alumina" company, in Gardanne (South of France), a setting close to both the bauxite and the coal that is

nessecary for the thermal supply. A full description of the process is provided by the Altech division of the Pechiny Group of France, located on the internet at: http://www.altech.pechiney.com/Gardanne/WebGardanne.nsf/vwUrl/MondeAlumine_Bayer_VI

Not surprisingly, Altech sells "dry alumina," and provides a specification sheet for its product on the internet at:

http://www.altech.pechiney.com/Gardanne/WebGardanne.nsf/vwUrl/Business_Produits_Hydratedaluminas_Dryhydrates_VI

A printed copy of the specification is provided herewith. The examiner's attention is drawn to the "Physical Characteristics" portion of the sheet which plainly lists particle sizes for the alumina. Ormet Corporation of Wheeling, West Virginia is another leading vendor of "dry alumina." A specification for Ormet's dry alumina is provided at http://www.ormet.com/ec1.htm, a printed copy of which is also provided. Note again that the Ormet product is also a small particle, having its physical properties described in terms of screen size. Should any doubt remain in the examiner's mind that "dry alumina" and "dry silica" commonly refer to small particles, the examiner is invited to type either of these terms into any internet search engine, whereupon the results will reveal numerous vendors offering products of small particles, substantially similar to those offered by Altech and Ormet.

Even if one assumes that some people use the terms "dry alumina" and "dry silica" somehow refer to aerogels, in contradiction to the use of these terms by major industrial producers as described above, it is plain that in the Wirth et al. reference at least, that is not the case. Rather, consistent with the common usage, Wirth et al. is describing particles, not aerogels. In example 1, column 8, line 18, for example, (the same example set forth by the examiner for the opposite proposition) Wirth el al refer to

the silica as "particles." Plainly, even if the examiner considers the term "dry silica" to mean aerogels, Wirth et al. do not.

For this reason, the examiner cannot possibly set forth a prima facie case of anticipation under 35 USC 102. As it is axiomatic that a proper rejection under 35 U.S.C. 102 must contain each and every limitation of the claim, ("[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration" W.L. Gore & Assocs. V. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). Wirth et al. simply do not disclose the element of "aerogels", unless the terms "dry alumina" and "dry silica" are interpreted to mean something that Wirth et al. directly contradict in their specification.

The examiner is undoubtedly concerned about the apparent breadth of claim 1, and has done an admirable job in bringing to bear references that relate to the claim. Nevertheless, the fact remains that until the applicant's disclosure, no one had successfully formed "an aerogel having a monolayer coating" as required by claim 1-5 and 7-9. The applicants appreciate the examiner's efforts in providing a comprehensive examination, however, having shown that Wirth et al. do not disclose the use of aerogels, the applicants respectfully request that the examiner remove his objection under 35 USC 102 and allow claims 1-5 and 7-9 to issue.

35 U.S.C § 112 second paragraph

The examiner has rejected claims 13, 18 and 23 under 35 U.S.C § 112 second paragraph as being indefinite. The applicant has renumbered the dependency of claims 13, 18, and 23 in the manner suggested by the examiner, and respectfully requests that the examiner remove this ground of rejection

Claims 6, 10-12, 14-17, 19-22, 24 and 25

The applicant notes the examiner's indication of claims 6, 10-12, 14-17, 19-22, 24 and 25 as allowable subject matter, and express their appreciation.

Closure

Applicant has made an earnest attempt to place the above referenced application in condition for allowance and action toward that end is respectfully requested. Should the examiner have any further observations or comments, he is invited to contact the undersigned for resolution.

Respectfully submitted,

Douglas E. McKinley, Jr.
Reg. No. 40,280

PO Box 202
Richland, WA 99352
Voice (509) 628-0809
Fax (509) 628-2307

The undersigned hereby certifies that the forgoing Amendment dated February 11, 2004 in reply to the office action of September 11, 2003 (10 pages) with exhibits (5 pages), PTO Form PTO/SB/17 (fee sheet, 1 page, two copies), and return postcard are being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to

Mail Stop Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on the date set forth below.

Douglas E. McKinley, Jr.
Reg. No. 40,280

Feb. 11, 2004
Date

Business corner
Products
Applications
Customer Area
Bauxaline

Gardanne site
The site
History
Environment
The Region

The world of alumina
Bauxite
The Process
Aluminas
Using alumina

Dry Hydrates

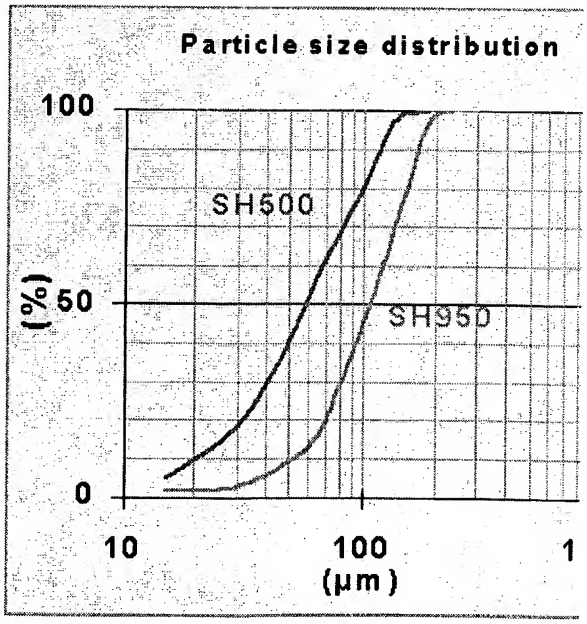
These aluminas are obtained by drying wet aluminium trihydrate produced by the Bayer pro

		SH500	SH950	SH950TA
Physical characteristics				
Free moisture	%	0.1	0.1	0.1
d50	µm	55	90	90
<15µm	%	8	1.5	1.5
<125µm	%	93	80	80
<200µm	%	-	-	0
Chemical characteristics				
Al_2O_3	%	65	65	65
Na_2O tt	ppm	2500	1600	1600
CaO	ppm	100	100	100
SiO_2	ppm	50	50	50
Fe_2O_3	ppm	60	65	65

They can be used in the same fields of application as wet hydrates, whether that be alumini sulphate, poly aluminium chloride (PAC), sodium aluminate, catalysts, catalyst supports, m sieves or zeolites. The choice between the two products (wet or dry) mainly depends on the logistic conditions and on the process to be used.

Dry alumina hydrate is more specifically used for titanium dioxide coating, in the glass industry and in standard ceramics.

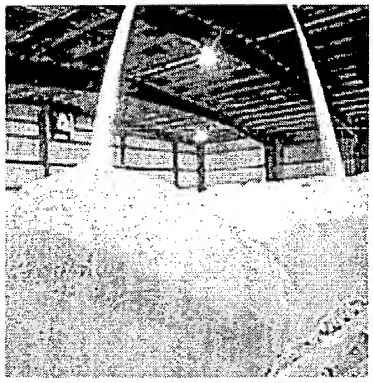
Dried, hydrated alumina is also used as a filler in resins, for its fire retarding properties, for its electrical insulating qualities and for the mechanical qualities that it gives to the obtained composite.



Previous :
- Wet hydrates

Next :
- Ground dry hydrates

MATERIALS & SERVICES



SPECIALTY ALUMINAS

- EH-30WC
- EH-30
- EC-1

Order entry / Customer service	Marketing/Sales
Phone: (225) 474-3712 Fax: (225) 474-3797	Phone: (225) 474-3777 Fax: (225) 474-3780 E-mail: hydrate@ormet.com

These quality products are available at competitive prices on either a FOB Burnside, Louisiana or a delivered basis, with Ormet's Burnside facility both experienced and knowledgeable on shipping via truck, rail or barge.

EH-30 WC Hydrated Alumina wetcake and the dry EH-30 Hydrated Alumina are the "first fruit" of the Bayer Process and act as precursors in the manufacture of various chemical products such as aluminum sulfate and sodium aluminate; engineered products such as molecular sieves and activated aluminas; and as a flame retardant in various plastics and rubber.

EH-30WC - Wet Alumina Trihydrate		
CHEMICAL	**TYPICAL**	**GUARAN-TEED**
SiO_2	0.008	0.020 Max
Fe_2O	0.010	0.025 Max
TiO_2	0.003	0.006 Max
Na_2O (non-leachable)	0.150	0.360 Max

Na_2O (leachable)	0.040	0.120 Max
Al_2O_2	–	64.5 Min
LOI	34.6	35.8 Max 34.0

PHYSICAL	**TYPICAL**	**GUARAN-TEED**
Moisture	8.5	15.0 Max
Oxylates	< .003	0.01 Max
H_2SO_4Insol	–	0.07 Max
Caustic Insoluble	0.03	0.10 Max

SCREENS:	**TYPICAL**	**GUARAN-TEED**
+ 100	8%	20% Max
+325	95%	85% Min

* All analysis, except moisture, on dry hydrate basis.

EH-30 - Dry Alumina Trihydrate		
CHEMICAL	**TYPICAL**	**GUARAN-TEED**
SiO_2		

	0.008	0.020 Max
Fe_2O	0.010	0.025 Max
TiO_2	0.003	0.006 Max
Na_2O (non-leachable)	0.150	0.360 Max
Na_2O (leachable)	0.040	0.120 Max
Al_2O_2	–	64.5 Min
LOI	34.6	35.8 Max 34.0

PHYSICAL	**TYPICAL**	**GUARAN-TEED**
Moisture	0.05.	0.1 Max
Oxylates	< .003	0.05 Max
H_2SO_4 Insol	–	0.07 Max
Caustic Insoluble	0.03	0.10 Max

SCREENS	**TYPICAL**	**GUARANTEED**
+100	8%	20% Max
+325	95%	85% Min

* All analysis, except moisture, on dry hydrate basis.

EC-1 Calcined Alumina is Smelter Grade Alumina (SGA), manufactured via the Bayer Process. Although designed for use in hall cells for aluminum production, EC-1 Calcined Alumina also finds application in other non-stringent industrial ceramics.

EC-1 - Smelter Grade Alumina		
CHEMICAL	**TYPICAL**	**GUARAN-TEED**
Na_2O	0.34	0.50
SiO_2		

	0.013	0.025
TiO_2	0.005	0.010
Fe_2O_3	0.018	0.030
LOI (300° - 1,000°C)	0.90	-

PHYSICAL	**TYPICAL**	**GUARAN-TEED**
Surface Area (m^2/g)	55-70	-
Percent Alpha, %	13-15	-
Ultimate Crystal Size (um)	<1	<1

PARTICLE SIZE ANALYSIS: (TYLER STANDARD	**REGULAR**	**GUARAN-TEED**
% on 100 Mesh	8	-
% on 200 Mesh	70	-
% on 325 Mesh	95	-
% through 325 Mesh	5	-